

Abstract of the Invention

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2 A light beam encoded with data simultaneously reads out  
3 data stored in tracks on an optical disk and produces a  
4 reflected beam directed to a detector array. The data stored  
5 on the optical disk and the encoded data may be components of  
6 vector arrays. As the light beam illuminates the rotating  
7 optical disk, the data stored on the disk is multiplied by the  
8 encoded data. The products of the multiplication are encoded  
9 in the reflected beam. A multiplicity of data is read out in  
10 parallel from the optical disk and simultaneously correlated  
11 with the encoded data. This comparison or correlation  
12 operation is performed on digitally encoded data utilizing  
13 convolution, or with analog encoding. The present invention  
14 can be utilized in pattern matching.